

PATENT SPECIFICATION

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(54) A CELL FOR TESTING THE LIGHT FASTNESS OF SAMPLES

(71) I, CHARLES E. TEMPLAR, a British subject of 20 Mattock Lane, London, W5, SBH, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns improvements in or relating to light fastness testers.

My Patent Specification No. 1 358 692 describes an improved light fastness tester which provides a micro-environment for the sample being tested for light-fastness. The tester also prevents undue heating of the sample by the light source by providing a block against which the sample is held and which block is cooled by the passage of liquid flowing therethrough. It is sometimes desirable to test a sample not merely under particular relative humidity conditions but also in which the sample is wet.

The present invention provides a light fastness tester cell which provides a micro-environment for a sample to be tested for light fastness, which cell comprises a cell body having at least one transparent face, a support plate and a masking plate between which the sample may be mounted and fluid supply and removal means, whereby fluid may be applied to at least the portion of a sample which is exposed through the masking plate to light entering the cell.

In one embodiment, the present invention provides a cell in which the support plate and the masking plate each has one or more fluid distribution grooves, and the cell may include a liquid distribution sheet.

In a further embodiment, the invention provides a cell in which the fluid supply includes a pump or a pipe from a pressurised supply and one or more spray heads to enable fluid to be sprayed over the face of a sample which is not wetted by the fluid; such samples include hydrophobic synthetic fabrics and printed or painted metal. It is envisaged that the cells of the

invention may be converted one into the other by means of replaceable components or separate cells may be constructed for materials which are wet and those which are not wet by the fluid.

The cell of the invention is used to provide a flow of fluid, that is liquid and/or gas, over the sample. While the invention will be more particularly described hereinafter as a cell in which the fluid is a liquid, it is to be understood that a gas may be used in the alternative or in addition. Such a gas may be a purge gas to remove volatile contaminants from a sample or to supply likely contaminants such as SO₂, H₂S, etc., in cases where this permits a user to create appropriate test conditions in the cell.

The cell body will normally comprise a rectangular container which has glass front and rear walls, and metal side walls, however other shapes of containers may be used if desired, and the invention is not to be limited by the construction of the cell body.

The cell may also comprise a cooled block as described in Specification No. 1 358 692 and such a block may be mounted in contact with the support plate or one face of the block may form the support plate, but the cooling effect of the passage of liquid and possible evaporation makes a cooled block less necessary.

The liquid distribution sheet is necessary to obtain a substantially uniform distribution of liquid over the area of the sample, and an economical sheet has been found to be blotting paper, but other sheets of paper, woven or non-woven fabric or open-celled plastics may be used, for example so-called capillary sheeting is commercially available and may find some application. It may also be advantageous to select hydrophobic or hydrophilic sheets for various media to be tested.

The masking plate is essentially a standard mask, exposing one or two portions of the sample to the light which enters the cell. It

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is convenient to have one substantially central groove on the inner face of the masking plate, and a correspondingly positioned groove on the support plate.

The sample, which may be a fabric, paper, plastics sheeting, laminate, coloured packaging or the like, is positioned between the masking plate and the fluid distribution sheet, the support plate being on the other side of the distribution sheet, with the grooves on the inside of the sandwich thus formed.

Liquid, which is normally water, but may be an aqueous solution, for example water containing surfactant or fabric softener, or sea water, an industrial solvent, dry cleaning fluid, or the like, is supplied to the cell in such a manner that it is distributed over the area of the liquid distribution sheet, assisted by the grooves in the support plate and masking plate. Conveniently, the liquid supply and removal means comprise a gravity feed reservoir which feeds to the top of the cell and to the grooves via a capillary tube, the liquid being collected by a deflector plate at the bottom of the distribution sheet and leaving the cell by an outlet tube.

If desired, the temperature of the liquid may be thermostatically controlled to provide particular testing conditions and/or cooling to counteract the heating effect from the light source.

The invention will now be illustrated by way of example only, with reference to the drawings, accompanying the provisional specification, in which:

Figure 1 is cross-sectional view of a cell according to the invention, and

Figure 2 is a front view, part cut away, of the cell of Figure 1.

The cell has glass front and back walls 1, metal side walls 2, and synthetic resin base 3, and removable top 4. A support plate 5 is removably mounted in the cell by being supported by tongue 6, engaging a slit in the top, and has on its inner face a groove 7, for assisting the dispersal of water which is supplied from PTFE pipe 8, fed by means of a control capillary and a gravity feed reservoir with a constant head device, not shown. A sheet of blotting paper 9, acts as a water distribution sheet, thus keeping cloth sample 10, wet over its complete area.

Masking plate 11, is mounted onto the backing plate by screws 12, and holds the sample and distribution sheet in close contact. The masking plate has two cut-outs 13, which serve as windows to expose the sample to the light generally shown as A, 60 and groove 14, on its inner face.

The water supplied from pipe 8 is collected at the bottom of the water distribution sheet by a shaped stainless steel deflector plate 15. The water leaves the cell by outlet tube 16.

The cell according to the invention may be used as one of a plurality of cells in a light fastness tester, of which a number are commercially available. Modifications of the cell described above will be apparent to the skilled man, without departing from the scope of the invention.

WHAT I CLAIM IS:—

1. A light fastness tester cell which provides a micro-environment for a sample to be tested for light fastness, which cell comprises a cell body having at least one transparent face, a support plate and a masking plate between which the sample may be mounted and fluid supply and removal means, whereby fluid may be applied to at least the portion of a sample which is exposed through the masking plate to light entering the cell. 75
2. A cell according to claim 1, wherein the support plate and the masking plate are each provided with one or more fluid distribution grooves. 80
3. A cell according to claim 2, comprising also a liquid distribution sheet. 85
4. A cell according to claim 3, wherein the liquid distribution sheet is of blotting paper, woven or non-woven fabric or open-celled plastics. 90
5. A cell according to any one of claims 2 to 4, wherein the masking plate and the support plate each has a single substantially central groove on its inner face. 95
6. A cell according to any one of claims 2 to 5, wherein the fluid supply means comprises a gravity feed reservoir which feeds to the top of the cell and to the grooves by way of a capillary tube. 100
7. A cell according to claim 2, substantially as hereinbefore described with reference to the drawings. 105
8. A cell according to claim 1, wherein the fluid supply means comprises a pump or a pipe from a reservoir which may contain liquid under pressure and one or more spray heads. 110

For the Applicant,
I. C. WISHART,
Chartered Patent Agent.

1601570 PROVISIONAL SPECIFICATION
2 SHEETS This drawing is a reproduction of
the Original on a reduced scale
Sheet 1

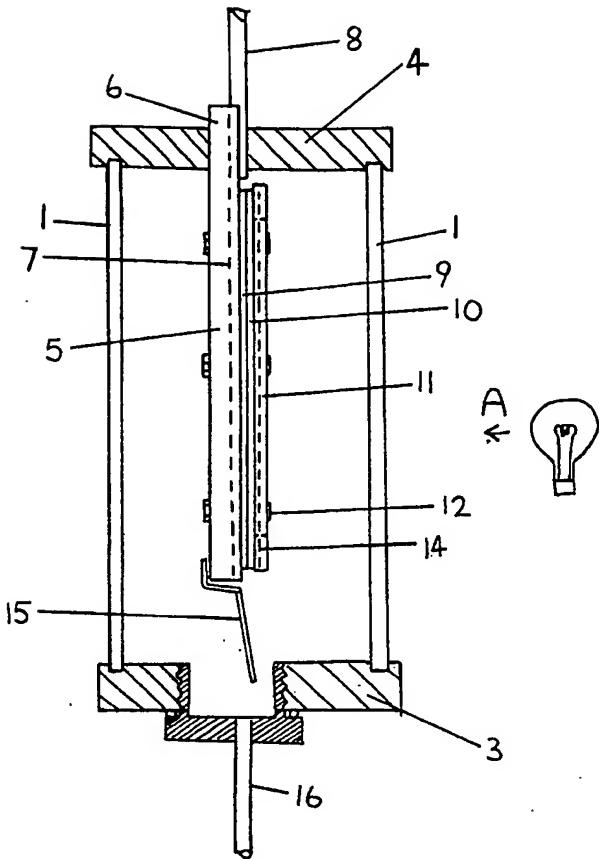


Fig 1

1601570 PROVISIONAL SPECIFICATION
2 SHEETS This drawing is a reproduction of
the Original on a reduced scale
Sheet 2

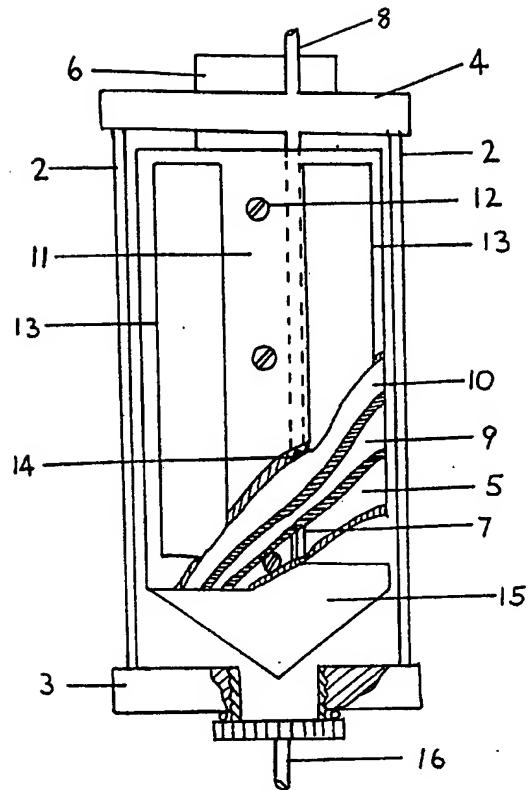


Fig 2